

### **Remarks**

The above Amendments and these Remarks are in reply to the Office Action mailed March 25, 2004. Claims 1, 4-22, 30-35 and 37-49 were pending in the Application prior to the outstanding Office Action. Claims 14 and 35 are being amended herewith, leaving Claims 1, 4-22, 30-35 and 37-49 remaining for the Examiner's consideration. Reconsideration and withdrawal of the rejections are respectfully requested.

### **I. Claim Objections**

Claims 35 was objected to because it depended from canceled claim 23. Claim 35 has been amended to be dependent from pending claim 37. Applicants respectfully request that this objection now be withdrawn.

**Discussion of the claim rejections begins on the following page.**

## II. Claim Rejections under 35 U.S.C. 102(b)

Claims 8-10, 14-17, 20-21, 31-35, 37-38 and 40-49 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Lee (U.S. Patent No. 4,789,801).

In support of these rejection, it was alleged in the Office Action that FIGS. 4-6 of Lee "teaches an air conditioner (loud speaker), comprising a housing; a voltage generator; a first array of electrodes 74; a second array of electrodes located downstream and in a staggered relation to the first array." (See pages 2 and 3, section 5 of the present Office Action.)

For the convenience of the Examiner, FIG. 5 of Lee (the cross sectional top view) is shown below, with red arrows added to show the distances downstream that the second electrodes 72' are from the first electrodes 74'.

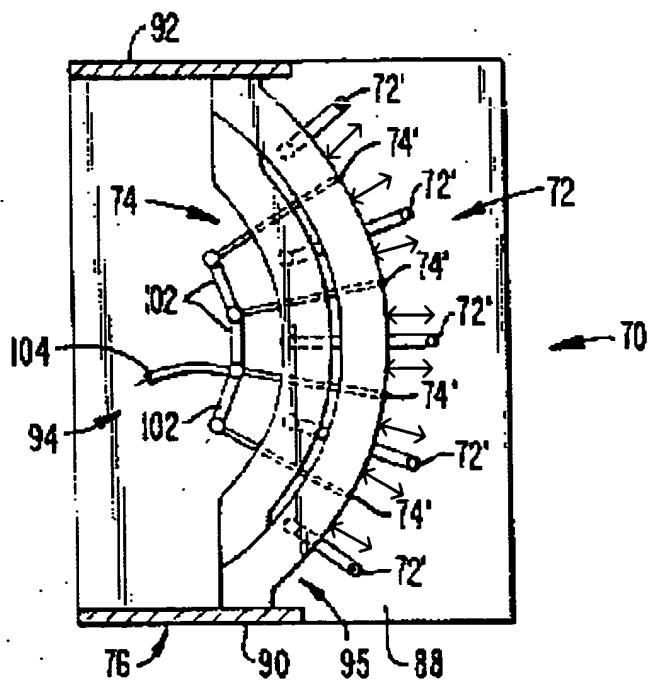


FIG. 5.

## II.A. Claim 8

Claim 8 requires "a first array of electrodes, aligned to define a first plane" and "a second array of electrodes electrically connected to one another, including two outermost second electrodes, each having a nose, said nose of each said outermost second electrodes aligned to define a second plane parallel to said first plane, and *one or more inner second electrodes recessed from said second plane so that each inner second electrode is further downstream from said first array of electrodes than said outermost second electrodes.*"

As can be seen from FIG. 5 of Lee (shown on the previous page), the two outer most second electrodes 72' (highlighted in blue) *are the same distance downstream from the first electrodes 74' that the three inner second electrodes 72' (highlighted in yellow) are from the first electrodes 74'.* Thus, the embodiment of FIGS. 4-6 of Lee does not teach "a second array of electrodes electrically connected to one another, including two outermost second electrodes, each having a nose, said nose of each said outermost second electrodes aligned to define a second plane parallel to said first plane, and *one or more inner second electrodes recessed from said second plane so that each inner second electrode is further downstream from said first array of electrodes than said outermost second electrodes.*"

Additionally, on page 4, Section 8 of the most recent Office Action (in the Examiner's "Response to Arguments"), the Examiner admits that Lee "does not teach the inner second electrodes being at a greater distance downstream from the first array than the outermost second electrodes." Accordingly, it would seem that the Examiner should also admit that Lee does not disclose "*one or more inner second electrodes recessed from said second plane so that each inner second electrode is further downstream from said first array of electrodes than said outermost second electrodes,*" as is required by claim 8.

Further, on page 3, Section 7 of the most recent Office Action, the Examiner explicitly states that "Lee teaches all the second electrodes being at equal distance from the first array (see FIG. 4-6)" and that "Lee does **not** teach the inner second electrodes being positioned at a greater distance downstream from the first array than the outermost second electrodes." (emphasis added).

For at least these reasons, Applicants respectfully request that the 102(b) rejection of claim 8, and its dependent claims 9-10, 31 and 40, be withdrawn.

### **II.B. Claim 14**

Claim 14 requires "a first array of electrodes, including N first electrodes, where  $N \geq 2$ ; and a second array of electrodes including at least  $N+1$  second electrodes electrically connected to one another, *said second array including two outermost second electrodes, and  $N-1$  inner second electrodes located between said outermost second electrodes and a greater distance downstream from said first array than said outermost second electrodes.*

For reasons similar to those discussed above with regard to claim 8, Applicants respectfully request that the 102(b) rejection of claim 14, and its dependent claims 32 and 41, be withdrawn.

### **II.C. Claim 15**

Claim 15 requires "a plurality of ion collector electrodes electrically connected to one another and located downstream from, said ion emitter electrodes, one or more of said ion collector electrodes receives ions from principally two of said ion emitter electrodes and one or more of said ion collectors electrodes receives ions from principally one of said ion emitter

*electrodes, said one or more ion collector electrodes that receives ions from principally two ion emitter electrodes being located further downstream from said ion emitter electrodes than said one or more of said ion collector electrode that receives ions from principally one of said ion emitter electrodes."*

This claim was discussed in detail in the previous Response filed on January 6, 2004, and thus need not be explained again herein.

For reasons similar to those discussed above with regard to claim 8, Applicants respectfully request that the 102(b) rejection of claim 15, and its dependent claims 33 and 42, be withdrawn.

#### **II.D. Claim 21**

Claim 21 requires "a second array of electrodes electrically connected to one another, including two outermost electrodes, and at least one electrode located between said outermost electrodes, *each said electrode located between said outermost electrodes being located further downstream from said first array of electrodes than said outermost electrodes*; wherein each electrode in said second array includes a substantially flat collecting surface that extends downstream from said first array."

For reasons similar to those discussed above with regard to claim 8, Applicants respectfully request that the 102(b) rejection of claim 21, and its dependent claims 22, 34 and 43 be withdrawn.

## **II.E. Claim 37**

Claim 37 requires "a first array of electrodes; a second array of second electrodes located downstream of said first electrode; and *means for equalizing an electrical field created across the second array.*"

As Applicants had pointed out in the Response filed on January 6, 2004, Lee does not teach or suggest "a means for equalizing an electric filed created across the second array", as required by claim 37. **There was no explanation provided in the Office Action of how Lee may teach such a feature.** For at least these reasons, Applicants respectfully request that the rejections of claim 37, and its dependent claims 38 and 44, be withdrawn.

## **II.F. Claim 44**

Claim 44 requires "at least three collector electrodes electrically connected to one another, located downstream from said emitter electrodes, *said at least three collector electrodes including two outermost collector electrodes and one or more inner collector electrode located between said outermost collector electrodes, wherein each said inner collector electrode is a greater distance downstream from said emitter electrodes than said outermost collector electrodes.*"

For reasons similar to those discussed above with regard to claim 8, Applicants respectfully request that the 102(b) rejection of claim 44, and its dependent claim 45 be withdrawn.

## **II.G. Claim 46**

Claim 46 requires "a plurality of second electrodes electrically connected to one another, including two outermost second electrodes, each having a nose, said nose of each said outermost second electrodes aligned to define a second plane parallel to said first plane, and *one or more inner second electrodes recessed from said second plane so that each inner second electrode is further downstream from said first plane than said outermost second electrodes.*"

For reasons similar to those discussed above with regard to claim 8, Applicants respectfully request that the 102(b) rejection of claim 46, and its dependent claim 47 be withdrawn.

## **III. Claim Rejections under 35 U.S.C. 103(a)**

Claims 1, 4-7, 11-13, 18-19, 22, 30 and 39 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Lee as applied to claims 8, 14, 15 and 21.

With regard to claim 1, the Examiner explicitly has admitted in the Office Action that "Lee teaches all the second electrodes being at **equal distance** from the first array (see Fig. 4-6)" (emphasis added).

However, it was alleged in the Office Action that "Although Lee does not teach the inner second electrodes being positioned at a greater distance downstream from the first array than the outermost second electrodes, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, that the distance of the second electrodes to the first would have been an art-recognized variable determined by routine experimentation."

In Applicants' previous Response, filed on January 6, 2004, Applicants explained in great detail that when the nose of all the second electrodes are the same distance from the first

electrode array (e.g., as shown in FIG. 5B of the present application), the electrode field at the noses of the inner second electrodes (e.g., 242-2 and 242-3 in FIG. 5B) will be greater than the electric field at the noses of the outermost second electrodes (e.g., 242-1 and 242-4 in FIG. 5B). This is because, as was explained, the electric field produced at the nose of each second electrode is proportional to the quantity of ions that contact the nose of the second electrode and the distance ions travel before reaching the nose of the second electrode.

In accordance with embodiments of the present invention, by moving the inner or middle second electrodes further downstream, (e.g., as shown in FIG. 6B of the present application), and as required by claim 1, the additional distance that ions must travel to reach the noses of the outer or middle second electrodes will substantially offset the additional number of ions received at the noses of the inner second electrode. This should result in a substantially even or similar electric field generated at the nose (i.e., most upstream portion) of each of the second electrodes, as explained in paragraph [0080] of the specification.

Applicant respectfully asserts that the Examiner has failed to establish a *prima facie* case of obviousness. As explained in MPEP 2143.03, "[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art."

The Examiner has explicitly admitted that the applied prior art reference does not teach the inner second electrodes being positioned at a greater distance downstream from the first array than the outermost second electrodes. Nevertheless, without providing any support or rationale, the Examiner has asserted that "it would have been obvious to one of ordinary skill in the art, at the time the invention was made, that the distance of the second electrodes to the first would have been an art-recognized variable determined by routine experimentation."

Applicants respectfully disagree that the claimed configuration of the second electrodes would have been obvious. The Examiner has cited no case law or MPEP section that states that the Examiner's general assertion is sufficient to establish a *prima facie* case of obviousness. Further, the Examiner has not pointed to any suggestion or motivation in the prior art to produce the claimed invention.

As pointed out by the Federal Circuit in *In re Fritch*, "The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992). If the Examiner is to maintain this rejection, Applicants respectfully request that the Examiner point out where the prior art suggests positioning the inner second electrodes at a greater distance downstream from the first array than the outermost second electrodes.

Claims 4-7, 30 and 39 depend from and add additional features to claim 1. Applicants assert that claims 4-7, 30 and 39 are patentable for at least the reasons discussed above with regard to claim 1, and for the features that they add. Accordingly, Applicants respectfully request that the rejections of these claims also be withdrawn.

Additionally, for reasons discussed above with regard to claim 1, Applicants also assert that Lee does not obviate claims 8-10, 14-17, 20-21, 31-35, 37-38 and 40-49.

#### IV. Conclusion

In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowable, and a Notice of Allowance is requested. The Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of a patent.

The Commissioner is authorized to charge any underpayment or credit any overpayment for any matter in connection with this response which may be required, including any fee for extension of time, in the Request for Continued Examination (RCE) Transmittal submitted herewith.

Respectfully submitted,

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